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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.             | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|------------------|
| 10/675,093   | 09/30/2003  | Robert P. Rossi      | 5760-12900                      | 4769             |
| 35690  | 7590        | 05/31/2006           |                                 |                  |
| MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.<br>700 LAVACA, SUITE 800<br>AUSTIN, TX 78701 |             |                      | EXAMINER<br>SCHNEIDER, JOSHUA D |                  |
|  |             |                      | ART UNIT                        | PAPER NUMBER     |
|  |             |                      | 2182                            |                  |

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/675,093             | ROSSI, ROBERT P.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Joshua D. Schneider    | 2182                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 11-18, 22-24 and 28-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-18, 22-24 and 28-34 is/are rejected.
- 7) ☒ Claim(s) 35 and 36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/6/06</u>  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 11, and 22 have been considered but are moot in view of the new ground(s) of rejection. The new subject matter claimed by the amended limitations is rejected based on new art.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 6, 7, 11, 13, 16, 18, 22, 24, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,898,667 to Umberger et al. in further view of U.S. Patent 5,826,236 to Narimatsu et al.

4. With regards to claims 1, 11, 22, and 28, Umberger teaches monitoring utilization of a system resource (column 7, lines 41-43), a data management process selectively performing I/O operations dependent upon the monitored utilization of the system resource (column 7, lines 44-51). Umberger does not teach performing includes determining a scheduling of at least one I/O operation of the one or more I/O operations using a specified weight assigned to the first metric relative to the second metric. Narimatsu teaches scheduling using a weight set using a first metric relative to a second metric (column 6, lines 37-44). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the schedule weight setting of

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Narimatsu with the selective performance of I/O operations of Umberger in order to provide a better optimized sequencing for performing a plurality of processes.

5. With regards to claims 3, 13, and 24, Umberger teaches selectively performing the I/O operations includes allowing said I/O operations to be performed in response to the monitored utilization of the system resource falling below a predetermined threshold (column 8, lines 5-9); and preventing said I/O operations from being performed in response to the monitored utilization of the system resource exceeding the predetermined threshold (column 7, lines 44-51).

6. With regards to claims 6 and 16, Umberger teaches said system resource is an input/output (I/O) subsystem (column 8, lines 5-9).

7. With regards to claims 7 and 18, Umberger inherently teaches selectively time slicing said I/O operations dependent upon the monitored utilization of the system resource, as performing and preventing the I/O operations over time in accordance with a monitored threshold of operations time slices the operations.

8. Claims 2, 12, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,898,667 to Umberger et al. and U.S. Patent 5,826,236 to Narimatsu et al. in further view of U.S. Patent 6,615,244 to Singhal.

9. With regards to claims 2, 12, and 23, Umberger teaches said data management process is executed as a portion of a data migration application, not a data backup application. Singhal teaches that it was well known in the art at the time of invention to use monitored idle time for backup operations (column 1, lines 6-55). It would have been obvious to use the resource monitoring of Umberger and Narimatsu to complete data backup application in order to eliminate the need for a user to schedule backup operations.

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10. Claims 4, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,898,667 to Umberger et al. and U.S. Patent 5,826,236 to Narimatsu et al. in further view of U.S. Patent Application Publication 2004/0143569 to Gross et al.

11. With regards to claims 4 and 14, Umberger teaches said I/O operations are performed in response to time and event information, used to trigger the operations (column 6, line 54, through column 7, line 3), but fails to explicitly teach that time/event information is the monitored utilization of the system resource falling below a predetermined threshold for at least a predetermined amount of time. Gross teaches using idle time to perform background operations. Gross teaches that idle time can be defined by in many different ways, including low processor utilization, low bus utilization, or a period of device inactivity (paragraph 79). It would have been obvious to one of ordinary skill in the art at the time of invention to use the monitored predetermined time of below a threshold of activity of Gross for the triggering of I/O operations in Umberger and Narimatsu in to allow the user definition of trigger events in order to create a more user customizable application.

12. With regards to claim 17, Umberger fails to teach said system resource is one or more central processing units (CPUs). Gross teaches using idle time to perform background operations. Gross teaches that idle time can be defined by in many different ways, including low processor utilization, low bus utilization, or a period of device inactivity (paragraph 79). It would have been obvious to one of ordinary skill in the art at the time of invention to use the monitored predetermined time of below a threshold of activity of Gross for the triggering of I/O operations in Umberger and Narimatsu in to allow the user definition of trigger events in order to create a more user customizable application.

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13. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,898,667 to Umberger et al. and U.S. Patent 5,826,236 to Narimatsu et al. in further view of U.S. Patent 5,953,729 to Cabrera et al.

14. With regards to claims 5 and 15, Umberger teaches said I/O operations are performed in response to time and event information, used to trigger the operations (column 6, line 54, through column 7, line 3), but fails to explicitly teach selectively performing the I/O operations includes allowing said I/O operations to be performed in response to said I/O operations not having been performed for longer than a predetermined timeout period. Cabrera teaches that it was well known at the time of invention to monitor the time since the last backup operation, and perform the operation after such period of time has elapsed (column 3, lines 47-50). It would have been obvious to one of ordinary skill in the art at the time of invention to use the monitored predetermined period of time since last backup operation of Cabrera for the triggering of I/O operations in Umberger and Narimatsu in to allow the user definition of trigger events in order to ensure low amounts of lost time in a data recovery application.

15. Claims 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,898,667 to Umberger et al. and U.S. Patent 5,826,236 to Narimatsu et al. in further view of U.S. Patent 6,687,765 to Surugucchi et al.

16. With regards to claim 29, Umberger and Narimatsu fail to explicitly teach, but Surugucchi teaches the first metric is indicative of a level of a first type of activity at a particular system resource of the one or more system resources and the second metric is indicative of a level of a second type of activity at the particular system resource (see claims 1, 3, and 10, and column 6, line 34, through column 7, line 20). It would have been obvious to one of ordinary

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skill in the art at the time of invention to combine the statistical analysis of Suruguchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

17. With regards to claim 30, Umberger and Narimatsu fail to explicitly teach, but Suruguchi teaches the first type of activity comprises write operations, and wherein the second type of activity type comprises read operations (see claims 1, 3, and 10, and column 6, line 34, through column 7, line 20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the statistical analysis of Suruguchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

18. With regards to claim 31, Umberger and Narimatsu fail to explicitly teach, but Suruguchi teaches obtaining user-specified values of one or more parameters to schedule the one or more I/O operations, including a particular parameter specifying the relative weight assigned to the particular metric (column 3, line 3-42). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the statistical analysis of Suruguchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

19. With regards to claim 32, Umberger and Narimatsu fail to explicitly teach, but Suruguchi teaches the one or more parameters include an identification of the one or more system resources (column 6, line 34, through column 7, line 20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the statistical analysis of

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Surugucchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

20. With regards to claim 33, Umberger and Narimatsu fail to explicitly teach, but Surugucchi teaches automatically tuning at least one parameter of the one or more parameters based at least in part on historical information associated with one or more metrics of the plurality of metrics (column 6, line 34, through column 7, line 20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the statistical analysis of Surugucchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

21. With regards to claim 34, Umberger and Narimatsu fail to explicitly teach, but Surugucchi teaches wherein the one or more parameters include a parameter specifying an amount of data to be transferred by the data management process in each period of I/O activity of a sequence of periods of I/O activity (column 6, line 34, through column 7, line 20). ). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the statistical analysis of Surugucchi with the utilization metrics of Umberger and Narimatsu in order to tune the I/O system for high performance without imposing high overhead during operations.

***Allowable Subject Matter***

22. Claims 35 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



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23. The following is a statement of reasons for the indication of allowable subject matter: the subject matter of these claims in combination with the subject matter of the claims from which they depend was not found in the prior art of record.

***Conclusion***

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2004/0098423 to Chigusa et al. teaches the use of busy rate and other bus monitored statistics for determining backup execution operations. U.S. Patent 4,736,318 to Delyani et al. teaches the use of monitoring to tune an I/O system. U.S. Patent 7,035,808 to Ford teaches using various user assigned weights to allocate system resources.

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

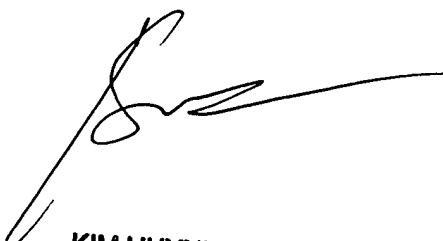
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua D. Schneider whose telephone number is (571) 272-4158. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JDS



**KIM HUYNH**  
**SUPERVISORY PATENT EXAMINER**  
5/24/06